THE VETERINARY RECORD

A Weekly Journal for the Profession.

FOUNDED BY WILLIAM HUNTING, F.R.C.V.S.

No. 1430 DECEMBER 4, 1915. VOL. XXVIII.

RESEARCH AND ENDOWMENT.

This week we publish an abstract of some distinctly noteworthy researches upon the comparative resistance of human and bovine types of tubercle bacilli to daylight and drying. The investigation follows what appears to be a new line of research; its results are, to say the least, highly suggestive; and very possibly it may be a starting point leading to substantial additions to our knowledge of comparative pathology. It was carried out by two medical men, who deserve all credit for their work; but it will be seen that the whole of it could have been quite as well performed by veterinarians, provided they had specialised in bacteriology. Plenty of our members have done this; but very few, hitherto, have been able to undertake research upon other than strictly veterinary subjects, and even in those the amount of research done by veterinary surgeons is comparatively small. We all know the reason for this. Research costs money; for most of our history, hardly any money for the purpose has been available to us, and not much is available even to-day.

Good research work is being done by the Board of Agriculture, and its cost is borne by the State; but the scope of the Board's activities in this direction is necessarily rather limited. A much wider field of research lies ready for veterinary surgeons—part of it consisting of strictly veterinary subjects, which they alone are really competent to work upon, and part of questions of comparative pathology and general bacteriology, which they are quite as well fitted to deal with as medical men—but lack of funds prevents them from entering upon it. Much work is done by veterinary surgeons on the Continent, and a fair amount of late years in America; and we all know why so little has yet been done in England.

Abroad, ample funds for research are available to veterinary surgeons. Veterinary schools are State supported, much money is allocated to research, and many veterinarians are enabled to devote the whole or the major part of their time to research work alone. The well-known Continental predominance in veterinary research is simply the result of its long-continued encouragement by the Continental Governments. We have men here as good as any abroad—the quality of work they have done with their limited opportunities proves that—and the one thing necessary to place this country among the first in the world in veterinary work is State encouragement for research. To increase the State aid to veterinary research would be a move towards true national economy; for the money spent would more than return in the resultant benefit to agriculture.

PYELO-NEPHRITIS (COW).

Subject. Shorthorn cow five months advanced in pregnancy. She had had five calves previously. She gave birth to twins in March last year. I attended her on that occasion, and there was very little difficulty in bringing about delivery. She cleansed three hours after I had left, but I learnt from the owner after she died that he wasn't quite sure whether all the "cleanse" came from her, though he took and buried it himself. Had she lived to calve again she would have given birth to twins, as revealed by the post-mortem examination.

History. Owner sent for a drink for "redwater" on Nov. 1st, and for another on the 4th. I first saw her on the 7th, and she died on the 11th.

Symptoms. The most important was suppression of urine, loss of appetite, dullness, disinclination to move, preferring to lie down most of her time. She passed no fæces (except a double handful of dark coloured "frothy" stuff) during the eleven days days of November whilst she was under special notice. Frequent and obviously painful attempts at micturition resulted in the discharge each time of about half a teacupful of thick blood-stained, purulent material, in which were three or four clots of blood, each about the size of a marble; temperature 102°, ears and horns cold, pinched appearance, back slightly arched.

Diagnosis. Nephritis. Not having seen such a case before that I can call to mind, I did not examine her per rectum for enlarged kidneys, which I might easily have done had I thought of it.

Treatment. Palliative. I considered the case hopeless.

Course of the disease. There was absolutely no change in the case during the 11 days, except that her temperature fell to 99.2°, and remained at that three days preceding death.

Post-mortem revealed both kidneys very appreciably enlarged, and each "enclosed" in a thick envelope of suet. The photo. is of the left one, which weighed 12½ lb. The right one weighed 10 lb., and was in a much more advanced state of disease. The above weights include the superimposed fat as described. The length of the left kidney alone was 13 inches.

Remarks. I was stupid enough not to examine the bladder at the post-mortem. The probability is that it was affected with cystitis. Professor M'Fadyean is of opinion that the mode of infection in this case is by way of the urethra, bladder, and ureters, and that is the reason I ascertained from the owner whether there was any retention of the placenta after her last parturition, and got an answer in the negative.

Professor Williams, in *Medicine*, says, "except for the irritation of a calculus, suppurative nephritis—pyelitis—is a very rare form of disease in the lower animals.

My pathology notes taken from Sir John's lectures give a full account of the cause, nature, and effects of pyelo-nephritis, but, of course, they do not describe the symptoms and so on, which more directly concern the ordinary practitioner like myself.

I sent the specimen to Professor M'Fadyean, who very kindly told me its pathological condition.

W. E. BLACKWELL, M.R.C.V.S.

Towcester.

OFFICERS, N-C.Os. AND MEN OF ARMY VETERINARY CORPS, WEST RIDING DIVISION. (*See Plate*).

Standing (Back Row). From left to right: Corporal A. Singleton, Private Bradley, Shoeing-Smith Mackey, Privates Kelley, Taylor, Bedford, Fawley, Cooke, Stockdale, Hopkin, Stockton, Sykes, Winters, Corporal C. E. H. Yates.

Sitting (Middle Row): Private Dunning, Sergeant F. Baker, Capt. A. N. Foster, Lieut.-Col. A. W. Mason, Privates Clarkson, Batty, Redfearn, Driver Cahill.

Sitting (Front Row): Privates Baker, Linton, Driver Glew, Private Horeningham.

A PECULIAR FRACTURE.

Subject. Aged, light draught gelding.

I was asked to see this horse, which was suffering from slight lameness. On examination it was found that there was a very slight swelling, about the size of the palm of a hand, tender to the touch, and soft, five or six inches below the elbow joint at the outside of the limb.

Fomentation was recommended, and in the course of a few days the lameness was greatly aggravated; it was not very apparent that an abscess had formed, which on opening discharged white creamy pus.

Further careful examination the following day with a finger revealed a small displacement of bone and an open elbow joint, as there was a copious discharge of joint oil from the wound.

The limb was examined very carefully, but no crepitation was apparent.

Autopsy. Slaughter was advised. Fracture of top of radius into six or seven pieces, largest piece being four or five inches in length and one and a half inches in width, with suppuration of the capsule of the elbow joint.

On working up the history of the case, the important fact was ascertained that the horse had been kicked in the stables about a fortnight prior to my first examination.

This case appears very abnormal, as the acute lameness did not develop until a lapse of some fourteen days after the date of the attributable accident.

A. HOSKIN, Lieut. A.V.C.

25th November.

ABSTRACTS FROM FOREIGN JOURNALS.

THE ACENTROSOMIC VARIETIES OF TRYPANOSOMES ARTIFICIALLY PRODUCED.

A. Laveran, in collaboration with Rondsky, has recently investigated the effects produced by trypasafrol upon the centrosomes of trypanosomes.

The results (*C. R. Acad. Sci.* 1915, Vol. 160, p. 543), are as follows;—

In mice infected with *T. brucei* and treated with the drug in doses of 0.5 to 1.0 mg. per 20 g. body weight the centrosome entirely disappeared at the sixteenth passage, and this change persisted in subsequent passages although no treatment was given.

With *T. soudanense*, *T. gambiense*, and *T. rhodesiense* incomplete results were obtained, while *T. lewisi* and *T. duttoni* resisted the action of the drug.

A strain of *T. evansi* has been passed through 459 mice without regaining the centrosome.

The acentrosomic varieties appear to be less virulent than the normal trypanosomes, and the author suggests the possibility of using such varieties for the protective inoculation of animals against the ordinary strains.—(*Tropical Vet. Bulletin*).

A METHOD OF TRANSMITTING KNOWN NUMBERS OF TRYPANOSOMES, WITH A NOTE ON THE NUMERIC RELATION OF TRYPANOSOMES TO INFECTION.

J. A. Kolmer has published this note (*Jour. Infec. Dis.*, 1915, July, Vol. 17, No. 1, pp. 79-94). His method of ascertaining the number of trypanosomes present in a volume of blood is practically the same as that adopted for the enumeration of the total leucocytes. It simply consists in diluting the blood with a liquid which will kill and stain the trypanosomes, and at the same time render the red corpuscles invisible. It is necessary to make a preliminary examination of the undiluted blood so as to get a rough idea of the number of trypanosomes present and thus permit of the calculation of a suitable dilution.

The diluting fluid has the following composition;—Formalin (40 per cent.) 2 c.c., Glacial acetic acid 2 c.c., distilled water 96 c.c. To these are added, after mixing, 2 c.c. of Carbol fuchsin (Ziehl-Neesen).

From experiments carried out with rats the author concludes that the injection of a small number of pathogenic trypanosomes lengthens the period of incubation and, in this manner, the duration of life, as dating from the time of infection; but, when the parasites once appear in the peripheral blood, the duration of life is about the same, regardless of whether the animal was originally infected with a large or a small number.—(*Tropical Vet. Bulletin*).

W. R. C.

THE ANNUAL REPORT ON THE PUBLIC HEALTH OF THE CITY OF DUBLIN FOR 1914, BY SIR CHARLES A. CAMERON, C.B., M.D.

There is no Veterinary Department for the municipality, and consequently no separate Veterinary Report. Mr. Andrew Watson is Veterinary Surgeon under the Public Health Committee, and his work appears chiefly in connection with the Dairies, Cowsheds and Milk Shops (Ireland) Order, and Slaughterhouse and Meat Inspection. The following extracts give an idea of the scope of the work :—

"It is satisfactory to be able to report that although the number of dairy cattle examined in city cow byres was 3822 it was only found necessary in 42 cases to interdict the use and sale of milk pending bacteriological examination.

Udder Examination.

Dairy yards inspected	122	Mastitis	8
Dairy cattle in same	3822	Fibrous thickening	2
Suspects	42	Indurated quarter	48
Samples taken	41	Ulcerated teats	1
Abscess superficial	126	Tuberculous udders	2
Large	22		

Considering the number of cattle in Dublin dairy yards the proportion of tuberculous udders will be seen to be very small.

In addition to examination at railway stations, the purveyors of milk receiving country milk also assisted the inspectors very materially. Whilst the objectionable dirty cloths and old newspapers which were used as packing around churns ceased, there were other objectionable practices which require supervision to prevent, it was found necessary to summon three persons resid- in the country, they sending into the city milk in cans which were defective. Fines were imposed in two cases.

Notices served during the year 1914.

	Served	Verbal
Have manure removed from dairy yard	128	8
Cleanse dirty cows	38	131
Limewash cow sheds	121	11
Increase ventilation in cow sheds	17	1
" cubic space in cow sheds	6	—
" lighting of cowsheds	13	—
Have repairs made to manure receptacle	32	—
Repair drainage of cow sheds	25	—
Have dairies and milk shops cleaned, papered, etc.	33	25
Have sleeping apartments in connection with milkshops or dairies abolished	5	—
Have objectionable articles removed from milk shops or dairies	9	—
Sundries	13	30
	440	216

Total number of inspections of dairy yards 5,458
" " dairies and milk shops 14,717

The Country Milk Supply, 1914, carried by four Railway Companies, totalled approximately 1,783,930 gallons.

The number of dairy cattle in cow byres in City average 5000. Milk supply from same about 1,820,000 gallons for the season November to May.

Slaughterhouse and Meat Inspection.

Number of visits paid by meat inspector—
Shops, slaughterhouse, abattoir, fish and fruit markets, railways, pork factories, etc., etc. 16,139

Abattoir.

The Corporation abattoir on the North Circular Road is not used by the Dublin victuallers to the extent that anyone interested in the provision of a good and wholemeat supply would desire. This comparatively meagre use of the abbatoir is mainly due to the fact that there are 58 private slaughterhouses in the city, many of which are largely used by victuallers other than the duly recognised occupier or registered owner.

The subjoined statement gives an approximate idea of the slaughtering that takes place in the abattoir and in the private slaughterhouses :—

Victuallers using abattoir	50
Beasts slaughtered weekly, about	180
Calves " " "	3
Sheep " " "	520
Pigs " " "	86
Victuallers using private slaughterhouses	123
Beasts slaughtered weekly, about	360
Calves " " "	18
Sheep " " "	950
Pigs " " "	460

The above figures do not include animals slaughtered for the army contracts, as the contractors sometimes used the abattoir in addition to private slaughterhouses.

The abattoir is visited daily by Mr. Watson, M.R.C.V.S., but it is obviously impossible for him to adequately control the meat supply of the city so long as the greater portion of it is from animals killed and dressed at all hours of the day in private slaughterhouses.

Appended figures show the number of private slaughterhouses in six other large towns as compared with Dublin :—Dublin 58, Manchester 52, Liverpool 20, Leeds 73 ; Glasgow, Edinburgh, Belfast, none.

HISTORY AND DISTRIBUTION OF HOG CHOLERA IN AMERICA.

V. A. MOORE, Ithaca, N.Y.

The following paper forms a section of the report to the American Veterinary Medical Association of the "Committee on Diseases," of which Dr. Veranus A. Moore was chairman, which was presented at the annual meeting, 1915, of the Association. In his introductory to the report, Dr. Moore says :—

"Your Committee on Diseases has, as requested by resolution at the New York meeting, centred its efforts in a study of hog cholera, its distribution and control in America. . . .

It was not until a comparatively recent date that a knowledge of the symptoms, lesions and means of diagnosing hog cholera gave much assistance to the practitioner. For this reason veterinarians, as a class, were loath to make a diagnosis of cholera, for it forecasted heavy losses from which there seemed to be no escape. At present the situation is changed. An early diagnosis is imperative for, if it is made in time and prophylactic measures taken, the majority of the herd can be saved. This places a heavy responsibility upon the practitioner who should intelligently meet his obligation both to his client and to the community. There are few, if any, specific infectious diseases of animals that can be more satisfactorily controlled by the veterinarian than hog cholera."

"The first appearance of hog cholera in this country, as ascertained by an extensive correspondence by the Bureau of Animal Industry soon after its organisation, and so far as we have since been able to learn, occurred in the state of Ohio in 1833. It appeared in South Carolina in 1837, and in Georgia in 1838. In 1840 it was found in Alabama, Florida, Illinois and Indiana ; in 1843 in North Carolina, and 1844 in New York. The

statement is made by Ostertag and also by Hutyra and Marek that hog cholera appeared first in the United States in 1833, and that it was carried to Europe from here. The *Rec. de Med. Vet.*, 1831, contains a statement in reference to the appearance of a disease in France in 1822, that, according to the description given, was hog cholera. Fleming refers to an epizooty among swine in Ireland in 1840. There are also numerous references to disease spreading among swine in Germany and other European countries prior to 1833. The accuracy of the diagnosis of these diseases cannot be assured any more than that of the disease among hogs in Ohio in 1833. All that can be determined is a conclusion drawn from the symptoms and lesions recorded. In 1865 Dr. Budd of England published a very exhaustive article on pig typhoid in which his description of the lesions is quite similar to those found later in cases of hog cholera in this country. In 1875 Prof. Axe, of London, investigated this disease and confirmed the findings of Dr. Budd.

While the fact cannot be proven the evidence is quite as conclusive that hog cholera was imported into the United States from Europe as it is that it was indigenous to America and taken from this country abroad. Whatever its source of origin, after its appearance it spread at first slowly, but later with increasing rapidity along the lines of commerce, until it has invaded practically every part of this country where swine raising has become an industry.

For a number of years after hog cholera first appeared in the United States it did not spread rapidly, although the outbreaks gradually increased in number. In the ten years from 1846 to 1855 inclusive, 93 outbreaks were reported, and it was during that period that the disease seems to have gained access to many new locations in this country. We refer to these as outbreaks of hog cholera, but the diagnosis is not clear in all cases. The literature shows that in earlier years the writings on swine diseases contain a large number of terms such as enteric fever, pig distemper, blue sickness, purples, scarlatina and many others which may or may not have been the disease now known as hog cholera.

In 1858 Dr. George Sutton of Aurora, Indiana, made a report on this disease in which he quotes The Worcester (Mass.) *Spy*, 'that many farmers in that city and vicinity are losing their swine by a mysterious and fatal disease known as hog cholera. In the south eastern part of this town it prevails in a greater or less extent upon every farm.' He adds that in most cases the disease is traced to western hogs that have been sold by drivers during the present season, and which seemed to have communicated the contagion to the other inmates of the styes in which they have been kept.

In 1861, Dr. Edwin M. Snow of Providence, R. I., contributed a paper on this disease to the United States Department of Agriculture. In 1875, Dr. James Law of Cornell University furnished to the same department a valuable paper setting forth the symptoms and morbid anatomy of intestinal fever in swine. He believed it to be contagious although the specific organism had not been found. In 1878 the United States Commissioner of Agriculture appointed nine men for a period of two months each to investigate the disease in various localities. In their reports considerable information concerning the symptoms and morbid anatomy that had been formerly described was confirmed. Law showed that it could be transmitted by inoculation, and Ditmers described a micro-organism which was called *Bacillus suis*, and which he believed to be the specific cause of the trouble. Later he described it as a micrococcus. The study of this disease was continued in the Division of Veterinary Science in the Department of Agriculture by Dr. Salmon. Its study was also taken up by certain men in other parts of the country. In 1885 Salmon and Smith announced the discovery of a specific bacterium and described its essential characters and properties. It was called Bacterium of Swine Plague.

In 1886, Dr. Theobald Smith, of the Bureau of Animal Industry, discovered another bacterial disease of swine. It was found to be identical with the German *Schweineseuche* and due to the same cause. This led Dr. Smith to call it, on account of its identity with the German disease, swine plague and its organism the bacillus of swine plague, and to change the name of the disease described in 1885 as swine plague to hog cholera and its organism to the Bacterium of hog cholera. Dr. Billings of the Nebraska State Agricultural Experiment Station, who was working on swine diseases, was not willing to accept the change in the nomenclature and he continued to write about hog cholera, the disease first described by the Bureau, as swine plague. His writings were widely distributed both in this country and Europe, and they are in a large measure responsible for the confusion relative to the nomenclature of these two diseases.

In 1893, Dr. W. H. Welch of Johns Hopkins Medical School, and Dr. Clements of Baltimore, presented a paper before the International Veterinary Congress in Chicago, in which they gave a clear history of the nomenclature of these diseases and in which they adhered to the one of the Bureau of Animal Industry.

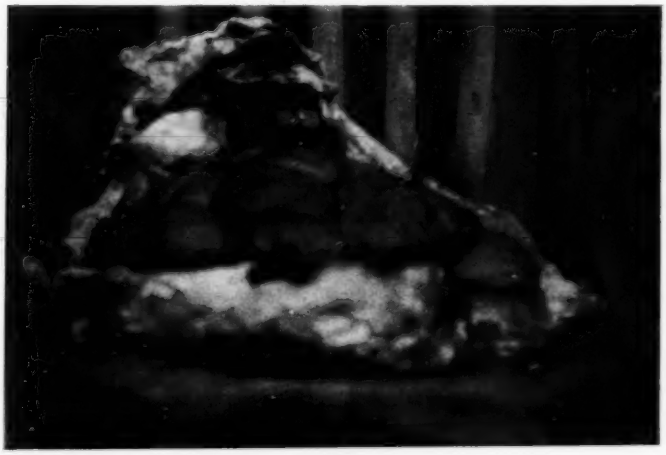
In 1903, deSchweinitz and Dorset discovered what they called a disease identical with hog cholera, but which they produced with virus that passed through the finest porcelain filters. Subsequent investigations by Dorset, Bolton, McBride and Niles showed that the organism known as the bacillus of hog cholera was not the cause of that disease, but when present it was a secondary invader. They did not, however, deny that it possessed pathogenic properties for swine. The correctness of this new conception of the etiology of hog cholera was soon accepted by European investigators.

Soon after the discovery of the filterable virus, it was found that the serum of hogs that had recovered from cholera possessed a certain amount of immunizing power against the disease, and that when they were hyperimmunized their serum would produce a temporary passive immunity against the virus. It was also pointed out that if the immunizing serum was used in conjunction with the virus, or the simultaneous method, the pigs became immune for a much longer time. It is this serum, known as the Dorset-Niles serum, together with the use of the virus and serum or the simultaneous method that are now being employed as prophylactics against hog cholera.

Although the fact seems to be proved that the outbreaks of cholera in this country were due to a filterable virus, it was believed that *B. suipestifer* (bacillus of hog cholera) was still a more or less important factor in swine diseases. A study of the reports of the investigations of the outbreaks shows that this organism was rarely, if ever, found in the middle West. It was, however, isolated from many outbreaks in the East and its pathogenesis for pigs was clearly established by inoculation and feeding experiments. In order that the disease produced by this bacillus should be differentiated from that of hog cholera, and in order that there might be a more differential nomenclature of swine diseases, the United States Live Stock Sanitary Association appointed, in 1910, a Committee of five to report on the nomenclature and classification of swine diseases. After carefully considering this subject the Committee reported at the meeting of the Association in 1911, that the name hog cholera should be given to the infectious communicable disease of swine occurring in epizootics caused by the filterable viruses; that the name *Salmonellosis* should be given to the disease caused by *B. suipestifer* (bacillus of hog cholera), and that swine plague should remain as the name of the infectious disease of hogs occurring sporadically or in epizootics are due to *Bacterium suisepticus* (bacillus of swine plague). The

OFFICERS, N.C.O. AND MEN OF A.V.C. WEST RIDING DIVISION.

A.V.C. WEST RIDING DIV. AMBULANCE WITH PATIENT, AT THE FRONT



PYELO-NEPHRITIS. Left Kidney of cow, 12½ lb.

To illustrate note by W. E. Blackwell, M.R.C.V.S.

UNIVERSITY
OF NEBRASKA
LIBRARY

UMI

report was adopted. While this nomenclature may not be the best, and while it has been adversely criticised, its justification rests in the fact that the diseases are distinguished by their etiology, which seems to be the one biological basis for classifying the specific infectious diseases.

There is a voluminous literature on hog cholera, and many differences of opinion exist concerning it. The findings, however, are tending to the conclusion that hog cholera caused by filterable virus constitutes the greater number of serious outbreaks among swine in this country, and that *B. suipestifer* and *Bact. suisepticus* are the causes of less serious epizootics or more sporadic diseases. The frequency of mixed infections has undoubtedly been the cause of confusion in arriving at a clear understanding of the *symptom complex* of this disease.

Distribution. Without going into details it can be stated that hog cholera exists to a greater or less extent in every hog raising state in the Union. It is much more prevalent in those sections where hog raising is an important industry, and where naturally there is more interchange of animals for breeding and other purposes. In Canada it is reported not to be common except in certain restricted areas. In those sections of the country where it is less prevalent it is found most frequently in garbage fed herds about large and small cities. The results of definite experimental work have shown that the probable source of infection in the garbage is the scraps of raw pork that come from hogs which were infected at the time of slaughter but which did not show lesions sufficiently to cause their condemnation. It is, generally speaking, a wide-spread disease, and it is gradually extending to uninfected places.—*Journal of the American Veterinary Medical Association.*

THE EFFECT OF DAYLIGHT AND DRYING ON THE HUMAN AND BOVINE TYPES OF TUBERCLE BACILLI. By LEONARD FINDLAY, M.D., D.Sc., Physician, Royal Hospital for Sick Children, Glasgow; and W. BLAIR M. MARTIN, M.D., Lecturer in Bacteriology, Glasgow University.

A paper read in the Section of Pathology and Bacteriology at the Annual Meeting of the British Medical Association at Aberdeen, 1914. The expenses of this research were defrayed by grants from the British Medical Association and the Carnegie Trust.

Much work has already been done on the type of tubercle bacillus occurring in tuberculous lesions in the human subject. The potency of the bovine type of bacillus in producing gland, bone, and joint tubercle, particularly in young subjects, is now well recognised, as also its ability to set up a miliary tuberculosis; but there is a striking absence from published records of instances of primary pulmonary tuberculosis associated with bovine type infections.

This incidence of bovine type infections in man is noteworthy, for in general the lungs of mammals are particularly good sites for the development of tuberculous lesions, and experimentally it is much easier to induce tuberculosis in healthy, susceptible animals—for example, rabbit or guinea-pig—by inhalation than by ingestion. The bovine type of bacillus is the less virulent for man, yet when it does infect it apparently enters by the less favourable route. A rational explanation of this anomaly is still wanting.

The lesser pathogenicity of the bovine type for the human species, though it accounts for the restriction of bovine type infections to the most susceptible members of the community—namely, the young—gives no hint why primary lung infections with the bovine type of bacillus should be so rare.

Further, while opportunities for respiratory infection with the human type of organism are admittedly numerous, as large numbers of human bacilli may be contributed to atmospheric dust through the expectoration of phthisical subjects, it hardly appears reasonable to assume that a notable number of bovine bacilli are not also disseminated atmospherically by the drying of discharges and secretions containing them.

In the naturally acquired tuberculosis of domesticated animals differences are also met with. Cattle, horses, and swine are all liable to spontaneous bovine type infections, yet while respiratory infection is the chief mode in the cow, in the horse and the pig it is most frequently alimentary (Nocard). Whether this lung incidence in domesticated animals is due to real differences in susceptibility of the lungs of these species, or merely to different modes of infection consequent upon the habits of each species, could only be settled by comparative inhalation experiments upon them.

To account for the absence of aërial infection of man by the bovine type of bacillus it has occurred to us to inquire whether atmospheric influences are more deleterious to the bovine than to the human type of bacillus. The effects of dessication and daylight on tubercle bacilli have been studied by several observers, and depending largely upon the experimental conditions, markedly different results have been obtained; but, so far as we know, no comparative tests have been made between typical human and bovine types of bacilli. There is general agreement that drying, even for months, has of itself little influence; however, when dried in dust Kirstein, for example, found that human tubercle bacilli did not survive diffuse daylight longer than fourteen days. Koch's cultures, exposed at a window to diffuse sunlight, died in five to seven days, while in direct sunlight they were killed in from a few minutes to several hours—a period which Weinzirl finds shortened to from two to ten minutes when the organisms are spread in thin films and are unshaded by glass.

In our experiments we used pure cultures on egg media of bacilli of known pedigree and virulence. Both were originally derived from the human subject, had been under cultivation for two years, and still retained their distinctive characters. They were exposed simultaneously and under identical conditions in each series of experiments in a room (temperature 50°–60° F.) with a northern exposure, and their virulence for the rabbit was then estimated by intravenous inoculation of amounts equivalent to 0.01 milligram of moist culture. (Detailed results are given in tabular form). Only the desiccating action of room temperature and the actinic effect of diffuse daylight were thus observed, either singly or together. As days vary much in brightness, in order to give some measure of them, we have included in our tables numbers indicating the hours of sunshine recorded during each of the periods of exposure. These figures were obtained, through the kindness of Professor Becker, from the records of the University Observatory, which is situated within half-a-mile of the laboratory.

From Table I. (*Effect of Desiccation alone*), it is seen that there is little appreciable loss of virulence of either type after seven days' desiccation.

From the experiments recorded in Table II. (*Effect of Diffuse Daylight alone*), it is seen that diffuse daylight causes a definite lowering of the virulence of both types; within seven days the human being avirulent. Note the small amount of sunshine recorded (3.4 hours) during the first five days.

In Table III. (*Effect of Diffuse Daylight with Simultaneous Desiccation*), a marked diminution of virulence is seen to have occurred within three days (11.1 hours recorded sunshine) and after seven days (only 3.2 hours more of recorded sunshine) pathogenicity had gone. The main point that emerges from this series is that under the combined influence of desiccation and diffuse

daylight not only is there a fall in virulence, but also that the drop is much more pronounced in the case of the bovine type.

The general conclusion, then, is that, tested in this way, the bovine type is distinctly more susceptible to the prejudicial effect of ordinary atmospheric influences (daylight and drying) than is the human type of tubercle bacillus. This difference between the types may in part explain why aërial infection with the bovine type is so infrequent in human beings.—*Brit: Med: Journal.*

Horse Breeding in Texas.

Texas heads the United States in the production of mules, and has second place in the breeding of horses, that being a very profitable industry, especially so far as draught and farm horses are concerned. These are hard workers, can pull heavy loads, and possess great endurance. Their number was estimated last year at 1,216,000, and their value is not equal, generally speaking, to that of mules bred in the same State. It is also reported from the New Orleans district that the laws passed by several of the States in the Union prohibiting betting at race meetings have lessened the demand for thoroughbred horses in the United States to such an extent that many of the owners of stud farms have left the country and taken their horses with them. Some time ago a prominent Kentucky breeder shipped his thoroughbreds—in all 159 horses, valued at £50,000—to Australia for the purpose of starting a large stud farm in that country.

The essentials of the Clydesdale.

The following is from a lecture by Prof. John R. McCall:—

"Although it is commonly believed that Lanarkshire was the home of the Clydesdale, there is evidence to prove that at the time referred to quite a number of good animals were to be found in Renfrewshire and other counties.

With the foundation of the Stud Book in 1877 the improvement in the Clydesdale became more manifest. Those responsible for the book had considerable difficulty in deciding what animals were to be admitted. They allowed in two horses, Prince of Wales and Darnley, which were the real foundation of the present breed. Both Darnley and Prince of Wales were of Shire descent.

The chief essentials of the Clydesdale are the possession of extraordinary quality, with weight, substance, gaiety of action, quality of bone, and nice silky hair, sloping pasterns, and large, sound feet. The height of males is usually about 17 hands, and of females up to 16 h. 2 in. To-day the Clydesdales are divided into two types, one of which is the show type, such as may be seen at Scotstown and other shows. Animals of that type show superb quality, extraordinary finish, and good action, but, if one might be hypercritical, a little lacking in middle and substance. They had not to consider the height of an animal only. A Clydesdale might be 17 hands high, but, looking at him 'end on' there might not be very much of him. Owing to the great extent to which in-breeding was carried on, quality was being produced at the expense of substance. Breeders had to face that question, the results of which were apparent in the show ring. Clydesdale breeders had always to keep the market in view—there is always a demand for good heavy horses—they had that market at home and abroad. The Colonies wanted horses of size and weight, and if farmers would choose to breed with that object in view there would be fewer 'misfits' and disappointments.

It had often been suggested of late that the only remedy for the so-called deficiency in size is to adopt the principle of allowing in Shire blood again. That however, is out of the question. The Clydesdale Stud Book is recognised all over the world, and it would never do to open up the book and admit Shire blood again. Those who wanted increased size should use the Shire, but let it be done without the Stud Book."

A Sixteenth Century Stable.

The following description of a Royal Continental stable of the time is by Fynes Moryson (16th century).

"The Elector's stable is by much the fairest that ever I saw, which I will briefly describe. In the first court there is a horse-bath, into which they may bring as much or little water as they list, and it hath twenty-two pillars, in each whereof divers arms of the Duke are graven, according to the divers families whose armes he gives. The same court serves for a tilting-yard, and all exercises of horsemanship; and there is also the horse-leache's shop, so well furnished as if it belonged to a rich apothecary. The building of the stable is foure square, but the side towards the Duke's pallace is all taken up with two gates and a little court yard, which takes up half this side, and round about the same are little cubboords peculiar to the horsemen, in which they dispose all the furniture fit for riding, The other three sides of the quadrangle contained some 136 choise and rare horses, having onely two other gates leading into the Cities market-place, opposite to those gates towards the Court. These horses are all of forrain countries, for there is another stable for Dutch horses, and among these chiefe horses one named Michael Schaz (that is Michaell the treasure) was said to be of wonderful swiftnesse. Before each horse's nose was a glasse window, with a curtaine of green cloth to be drawn at pleasure; each horse was covered with a red mantle, the racke was of iron, the manger of copper; at the buttocke of each horse was a pillar of wood, which had a brazen shield, where by the turning of a pipe he was watered; and in this pillar was a cubboord to lay up the horse's combe and like necessaries, and above the backe of each horse hung his bridle and saddle, so as the horses might as it were in a moment be furnished."—*Horse and Hound.*

Powdered Permanganate in the Treatment of Wounds.

M. Belin has for more than ten months employed permanganate of potash in powder form in the treatment of all wounds coming before him in the veterinary service of an infantry brigade. He has accumulated a vast experience, starting with laboratory research before the war, and is struck with the surprising rapidity with which wounds treated in this way cicatrise. In 15 days even severe wounds may cicatrise without extraction of the bullet. M. Belin has studied the mechanism of action: a true living culture of organic cells results, the permangate rapidly ceasing to be a powerful antiseptic and becoming a cicatrising agent which constantly gives up oxygen to the subjacent plasma and so to the cells bathed by it, oxidising the toxins and protecting the damaged area by means of the continuous adherent crust which the application has produced. The same technique applied to human wounds has given precisely similar results: the pain produced is bearable, not exceeding that caused by the application of iodine. In view of the simplicity of the method, the atoxicity of the product, its value as an antiseptic, the duration of its action, the adherence to the wound which is protected even if the dressing slips, its favourable action of cicatrisation, and its bactericidal and inhibitory action especially on anaerobes (tetanus, gas-gangrene), M. Belin considers that it would be rational to add a packet of permanganate to the first-aid outfit, as this will result in saving life and avoiding complications.—*The Lancet.*

"Mysterious" Disease in Ireland.

An instance of the devastation wrought on the lands of Carrowmore, Tulrahan, by a mysterious disease among cattle was afforded at the Claremorris Quarter Sessions recently in an action brought by the Congested Districts Board against a tenant of theirs for the recovery of one year's rent. The defendant admitted the amount due, but pleaded inability to pay, through the loss of his entire stock, nine head of cattle in all, by a strange disease which ravaged that side of the country.

Mr. O'Brien, V.S., Claremorris, gave evidence that the defendant was one of the heaviest losers in the district, and the nature of the disease had never been ascertained. The Department of Agriculture had applied themselves to a solution, and an eminent bacteriologist had come down and taken away with him materials for the purpose of his investigation, which, however, was not completed, as he had since joined the colours.

His Honor stated that he had read in the papers an account of the ravages of the disease in the district, but he should give a decree, and expressed the opinion that the case was deserving of the utmost consideration by the Board.—*Farmers' Gazette.*

A new species of Louse on Goats.

In a study which Ledyard made of the Thread Lung Worm in goats it was found that the animals were seriously affected by lice. Specimens of this louse were sent to Professor Vernon L. Kellogg of Leland Stanford Junior University. He described it as a new species, which he has called *Trichodectes hermsi* (Kellogg), in honour of Professor W. B. Herms of this station. Like all other vermin of this sort, it was easily controlled by dipping with coal tar disinfectants, such as Kreso or some compound solution of cresol. The reduction in profits to stockmen on account of lice harbored by domestic animals is far greater than is usually recognised and is a loss that is comparatively easy to prevent.—*Report of the College of Agriculture and the Agricultural Experiment Station of the University of California.*

PARLIAMENTARY.

In the House of Commons, on Nov. 25.

FOOT-AND-MOUTH DISEASE.

Mr. ACLAND, in reply to Capt. C. Bathurst, said the total number of outbreaks of foot-and-mouth disease since the outbreak near Bala a month ago was now 46, of which 45 had occurred in the Bath and Glastonbury districts and one in Pembroke. The animals already slaughtered comprised 862 cattle, 225 sheep, 324 swine, and one goat, and of these 432 cattle, three sheep, and 107 swine had so far been found to be affected. The area now subject to restrictions was one of approximately 15 miles round Bath and an adjoining area having a radius of about 10 miles from Butleigh, Glastonbury.

Motor Spirit.

Extract from Finance (No. 3) Bill (as amended in Committee).

13. For the purpose of giving veterinary surgeons an allowance or repayment of half the amount of motor spirit duty, whether payable under section eighty-four of the Finance (1909-10) Act, 1910, or this Act, Part I. of the Fifth Schedule to the Finance (1909-10) Act, 1910, shall be read as if the following paragraph were added thereto, namely:—

"(5) To a motor car kept by a registered veterinary surgeon whilst it is being used by him for the purposes of his profession."

The Hunting Memorial Fund.

Subscriptions received up to November 24th, 1915:—

Amount previously acknowledged	£377	16	0
Chas. F. Parsons, Esq., M.R.C.V.S., Cheltenham	1	1	0
Lieut. H. Keeling Roberts, A.V.C., Reserve Horse Transport Depot, Blackheath *second donation*		10	6
Geo. H. Jelbart, Esq., M.R.C.V.S., Stow-on-Wold		10	6
Fred. Leeds Gooch, Esq., F.R.C.V.S., Stamford	1	1	0
Lieut. W. W. Lang, A.V.C., Indian Exped. Force A., France	1	1	0
Geo. A. Harrison, Esq., M.R.C.V.S., Herne		10	6
	£382	10	6

Remittances by cheque or postal order to be made payable to "The Hunting Memorial Fund," and crossed "London, City and Midland Bank, Ltd., Kensington Branch." HENRY GRAY, Hon. Sec. and Treas.

23 Upper Phillimore Place, London, W.

The Hunting Memorial Stone.

The Memorial Stone has now been erected over the grave of the late Mr. William Hunting, F.R.C.V.S., in Putney Vale Cemetery.

It is to be hoped that all the friends and admirers of the deceased gentleman will, when they can find time or are in the neighbourhood of the cemetery, take the opportunity of inspecting the memorial.

A brass tablet is going to be placed under the portrait of W. Hunting in the Council Chamber of the Royal College of Veterinary Surgeons, 10 Red Lion Square, London, W.C.

Anglo-Franco-Belgian Veterinary Relief Fund.

The following additional donation is reported:—

Mr. William Watt Dollar, London	£5	0	0
Previously reported	52	7	0
Total	£57	7	0

FOREMAN.—On Dec. 1st, at High Cross, Tottenham, to Mr. and Mrs. R. J. Foreman, a daughter.

OBITUARY

JAMES JOHNSTON FRASER, M.R.C.V.S., Leicester. Graduated, N. Edin.: April, 1880.

Mr. Fraser died on Nov. 30th, aged 62.

ECONOMY—A QUESTION IN.

Sir,—At the present time we hear a great deal about economy, and conserving all the necessaries that we produce from the soil. We are told to make use of every available piece of land, by intensive culture and otherwise.

But so far I have seen no advice nor any mention of an endeavour being made to save the enormous number of domestic animals that are "done to death" every year, through ignorance, amateur doctoring, quacks, and the indiscriminate use of proprietory medicines and "cure-alls," which are advertised in the agricultural press.

The farm animals have another very serious enemy in the "arm chair vet."—the "lightning diagnoser"—of the papers, by whom the most serious diseases are prescribed for with an arrogance, and presumption, which might well bring the blush to the face of any "Hun."

If a human being is maltreated, or poisoned by some nostrum, an inquest is held. Why not have some similar inquiry regarding the death of a valuable animal that has *not* been professionally attended?

That some move should be made will be evident to any country practitioner. There are at present many drastic

measures being put in force. The time is ripe when we, as a profession, should combine and put the facts before the Board of Agriculture in the form of a petition, signed by every member of the profession on the Register. We might individually approach our Members of Parliament, and also arouse public interest by ventilating the subject in the press.

As an instance of the efficiency of the profession, we have only to look at the unstinted praise dealt out on the splendid condition of our cavalry and transport animals under the care of the vet. only.

I trust some more able pen than mine will take this matter up in the interests of one of the most important branches of our national food supply.

Vox.

THE POSITION OF OFFICERS A.V.C. (T.F.)

Sir,—With reference to Mr. Newdegate's letter to the *Times* on the 9th ult., from the House of Commons, calling attention to the grossly unfair treatment of officers, A.V.C. (Territorial), and also the reference to the difference in treatment meted out to these officers as compared to *all* officers in the R.A.M.C.—does it not seem extraordinary that our Council do not move in the matter?

The concessions granted to the R.A.M.C. were due in very large measure to the pressure exerted by their Council, and it is not very edifying to the profession that Territorial veterinary officers who joined in August, 1914, and later, should be still lieutenants, whereas *all* R.A.M.C. officers receive promotion after six months service!—Yours, etc.,

Nov. 18. DISAPPOINTED.

[The foregoing has been unavoidably held over. We have at different times received letters of similar purport from several sources, but hitherto have refrained from publishing them. This one, in common with some others, *assumes* that "our Council do not move in the matter." The letter to the D.G.A.V.S., reported at last meeting of Council (see our issue of Oct. 16, p. 172), is surely sufficient to show that such is not the case, and none of these letters offer any evidence that those efforts have ceased. The reference to the action of the medical profession in respect of the R.A.M.C. seems to make it necessary again to point out that they are numerically as 10 to 1 of our profession, that they have representatives and numerous supporters in Parliament, that they have an Association which is strong both numerically and financially, and there is also the weight which attaches to the alleviation of the sufferings of relatives and friends who are on war service. It should be obvious that our Council, acting for a profession which has been persistently neglected by the State for the seventy years of its corporate existence cannot take up a position equivalent to that of one so much older and stronger. But that is no evidence that they are doing nothing.]

ARMY VETERINARY SERVICE

WAR OFFICE, LONDON, S.W.

Extract from *London Gazette*,

WAR OFFICE, WHITEHALL, Nov. 25.

REGULAR FORCES. ARMY VETERINARY CORPS.

Temp. Lieut. to be temp. Capt.:—F. S. Clay, dated Nov. 9.

Col. E. R. C. Butler, C.M.G., to be temp. Brig.-General whilst employed as a Director of Veterinary Services, dated Nov. 7.

Nov. 26.

Temp. Lieuts. to be temp. Captains:—G. Barry, T. M. Parker, dated Nov. 11.

Dec. 1.

Temp. Lieuts. to be temp. Capts.:—W. P. Power, dated Nov. 16. A. Hoskins (Nov. 17.)

To be temp. Lieut.:—C. J. Clifford, dated Nov. 17.

TERRITORIAL FORCE. ARMY VETERINARY CORPS.

Dec. 1.

The appt. of Lieut. J. W. Tait, which was announced in *Gazette* of April 18 is cancelled.

To be Lieut.:—J. W. Tait, dated Dec. 2.

Dec. 2.

To be Lieut.:—W. H. Macfarlane, dated Dec. 3.

The A.V.C. Comforts Fund.

Strathyre, Parsifal Road,
Hampstead, N.W.

Dear Sir,—I herewith enclose further list of contributions of money and gifts received since previous list published in your issue of Nov. 13. May I again appeal for all knitted and flannel garments to be sent in to me as early as possible, as I am very anxious to despatch all consignments to our men on active service as soon as possible. May I also suggest that should any senders of parcels desire these to be *numbered* in the published lists, I cannot undertake to do this unless they will put the correct number of parcel on the list enclosed *with it*.

Yours truly,

Nov. 24. ADELAIDE M. MOORE.

(*This list was unavoidably held over last week.*)

List of Contributions received:—

Lieut.-Col. R. H. Holmes				£1	0 0
Mrs. T. Bone				1	0 0
Lieut.-Col. Arthur England				1	1 0
Miss Bevis				2	0 0
Mrs. Longbottom (per Mrs. S. Walker)				1	0 0
From Students, Royal (Dick) Veterinary College, Edinburgh, result of Billiard Match				2	7 6
Mr. Peter Wilson				1	0 0
Mrs. William Dale				2	2 0
Mrs. E. M. Richardson				1	1 0
per Mrs. Shipley:—					
Mrs. Buxton	1	0	0		
Mr. J. A. Rolfe		10	6		
Mrs. Wyllys, Sen.		10	0		
Mr. Robert Crow		5	0		
Mrs. Frank Arnold		10	0		
Mr. S. Rolfe		10	0		
Mr. R. C. Tayler		10	6		
Mr. Thomas Cook	1	0	0		
Mr. F. W. Barclay		10	0		
Mrs. Worts		10	0		
Mrs. H. Low	1	0	0		
Miss Aldred		10	0		
Miss Hunter		2	6		
				7	8 6
				£20	0 0

CORRECTION.

The following is the correct reading of the first item on the list in our issue of Nov. 13th:—

per Major Alston Edgar, A.V.C., subscribed by No. 5 Reserve Section, Army Vety. Corps, Curragh £5 0 0

Parcels received from:—

Mrs. Shipley, containing gifts from Mrs Bray, a friend, a friend, Mrs. M. L. Cleveland, Mrs. Rattee.

Second parcel, containing gifts from Wells Branch Bristol Red Cross (Mrs. G. Smith), Mrs. H. Wyllys, Mrs. Wilkinson, Mrs. Rattee (Fundenhall). Mrs. Press, Miss Blagg, The Mayoress of Gt. Yarmouth (Mrs. Worledge).

(20 prs. socks, 4 mufflers, 6 pr. mittens, 1 fl. shirt).

Mrs. Todd: Sun-shields and mittens
Mrs. Nurse (Working Party, Windermere): Helmets, mufflers, socks, mittens
Mrs. Garnett (St. Mary's, School Windermere): Mufflers, socks
Mrs. Walker (Alton): Socks, mittens, helmets, muffler
Mrs. Rutherford: Socks
Mrs. Kirby: Mittens, mufflers, helmets
per Dr. Bradley:—
Edinburgh friends: Mittens, mufflers, socks
Mrs. Latta: Books, socks. Mrs. Fennell: Socks
Mrs. Hamilton: Socks, mittens, belts, mufflers
per Mrs. Quinlan (Working Party, Streatham): Mufflers, helmets, mittens (wool supplied), writing cases
Miss Edwards (Neath): Mufflers, mittens, cigarette holders
Mrs. Haywood: Mufflers
Mrs. Sargent and Mrs. Heyland: Socks
Mrs. Crafer: Mufflers, socks. Mrs. Walsh: Mufflers
Lady Maud Cavendish: 60 prs. Socks, 10 mufflers (from Derbyshire Soldiers' Comforts Committee).
Mrs. Barber (Rugby): Pyjamas, helmets, muffler
Mrs. Hepburn: Socks, mittens, bodybelt, sweater, helmet
Mrs. O'Rorke: Mufflers, mittens, gloves
Mrs. McGowan: Muffler, socks. Miss Henderson: Socks
Mrs. Fearnside: Cigarettes, six parcels of comforts, socks, etc.

Dear Sir,—I would be grateful if you will be so kind as to publish in this week's issue of your paper the accompanying list of donations. May I take this opportunity of thanking those friends who have so generously assisted my collection for Mrs. Moore's Fund.

Yours truly,

Nov. 22nd. MARGT. METTAM.

Collected by Mrs. Mettam, R.V.C.I., Dublin, for Mrs. Moore's Fund.

Major Peddie, A.V.C. (T.)				£1	0	0
Mr. P. J. Howard, Ennis	2nd don.			1	1	0
Mr. T. Salusbury Price, London	"			5	0	0
Messrs. J. & H. Sumner, L'pool	"			2	2	0
Mr. H. Begg, Hamilton	"			1	0	0
Mr. M. Darby, Balbriggan	"			1	0	0
Mr. L. Magee, Navan	"			1	1	0
Mr. T. J. Mulcahy, Clonmel	"			1	1	0
Mr. F. A. Heney, Dublin	"			1	1	0
Mr. A. Watson, Dublin	"				10	0
Mr. J. H. H. Peard, Dublin	"			1	1	0
Mr. J. Holland, Athy	"				5	0
Mr. T. D. Lambert, Dublin	"			1	1	0
Mr. M. Barlow, Bray	"			2	0	0
Mr. J. Healy, Cork	"				10	6
Mr. W. H. Bloye, Plymouth	"			1	1	0
per J. V. Daly, Dublin:—						
Mr. J. Daly	2nd don.	£1	0 0			
Mr. John Daly	"	1	0 0			
Mr. J. Daly, Jun.		1	0 0			
Mr. J. V. Daly	"	1	0 0			
Mr. J. Nugent	"	1	0 0			
Mr. M. Nugent	"	1	0 0			
Mr. B. Nugent	"	1	0 0			
Mr. John Kenny	"	1	0 0			
				8	0	0
				£28	14	6
Previously acknowledged				325	19	6
				£354	14	0

The Green-bearded Oysters.

There is an unfounded prejudice against the green-beared oyster which ought to be removed. The common notion is that the greening of the gills of the oyster is either a sign of disease or that copper has specially invaded the mollusc. Neither is correct. It is deplorable that there should be at our disposal a bountiful supply of these nutrient delicacies, greenbeard oysters, in the salt estuaries of the Essex coast and that they should not meet with public favour because they have assimilated a green colouring material in their gills. This colouring is neither a sign of unhealthy condition nor of copper accumulation. It means that with the approach of winter there occurs in these salt marsh creeks a growth of a green sea moss, a purely vegetable product which is appreciated as food by the oysters lying in the adjacent beds. The greenness of the turtle might be objected to on the same lines and similar unreasonableness. In France the greening of oysters is a matter of study, a kind of finishing process, and the most esteemed oyster in that country is the green-beard, the "huitres verts." It is simply a question of environment. It is just possible that the "green-beard" is a living proof of a pure environment, for the algæ do not thrive in polluted waters or in waters which are newly charged with organic matters, as is often the case in estuaries carrying to sea the sewage of large towns.

In the well-known gastronomic work entitled "A Book of the Table," by Kettner, it is stated that more than a hundred years ago Thomas Fuller, the great divine, said that "the best oysters in England were the fat, salt, green-finned sort bred near Colchester." It is then stated that "since then, although the green-finned oysters are prized above all others on the Continent, they have come to be slighted in England through the fear that the greenness may be the effect of copper." The question attracted the attention also of that distinguished naturalist, Mr. Frank Buckland, who wrote that the reason why oyster-eaters in England have not hitherto availed themselves of these home-bred oysters is that their beards (the breathing gills) are in the winter months more or less tinged with a green pigment. This peculiar green, he said, is imparted to them by the seaweed called crowsilk, which grows abundantly in the Essex salt creeks. "Dr. Letheby's analysis," he added, "has pronounced this pigment to be purely vegetable, without the slightest trace of copper or other mineral. I consider that the vegetable pigment imparts a peculiar taste and agreeable flavour to the meat of these plump little oysters." This description which is borne out by a recent investigation which we have made, including a visit to the oyster beds at West Mersea, hear Colchester, and a chemical and microscopical examination of the "green-beards" taken from these beds.

The grounds where these oysters are cultivated are situated between walled marsh-land or salt marshes away from all risk of sewage contamination. There is no sewage system at Mersea; there is no main sewage pipe discharging into the estuary. The society known as the Mersea Island Cooperative Society, Limited, organised by and composed of the fishermen themselves, possess pits in which the oysters are deposited for a few days in order to have stocks handy for sending off at short notice. These are situated on the end of an uninhabited peninsula known as Feldie Marsh, separated by two "fleets" from the foreshore opposite the village of West Mersea. This precaution was taken by the society, in spite of the fact that the pits on the foreshore of Mersea Island have recently been declared free from contamination by the Board of Agriculture and Fisheries bacteriologist. It was felt, however, that contamination was not outside the range of possibility here, and it was

decided to secure this special situation for the beds in order to claim that the oysters are stored in a perfectly clean and healthy environment free from any suspicion of contamination.

It is a well-know fact that most shell-fish contain copper. We have found it invariably present in the oyster. We have not examined a single oyster without finding copper in it, but in minute quantity. Copper is present to a greater extent in the winkle, and we find that traces of it occur in the turtle. But we found much less copper present in the green-beard oyster than in the untinted varieties. While copper is a ubiquitous constituent of shell-fish, its distribution is chiefly in the liver and not in the gills or beard. We separated the gills of a green-beard and estimated the copper in the gills and in the fleshy portion, which is mainly liver. In the gills of four green-beards there was 0.0001 gramme of copper present, while in the "meat" there was 0.0004 gramme of copper present, and yet the meat is not green. In some white-beards examined the total copper found in four oysters was 0.0035 gramme of copper, or seven times as much as the total copper found in the green-beard oyster, and 35 times as much as was found in the separated green gills. This general occurrence of copper in the oysters and all shell-fish is not alarming; but the curious point is that there is far less copper in the green-beard than in the ordinary or white-bearded oyster, and yet the prejudice against the green-beard has been based in certain quarters on its copper content. The oyster contains a remarkable amount of iron and probably in a valuable therapeutic form—namely, as an organic combination. The total amount of iron found in four oysters was 0.0054 gramme (Fe). Of this a notable proportion occurred in the gills, which is consistent with the view that the green pigment is due to vegetable matter (*e.g.*, sea algæ or sporules of the seaweed called crowsilk), containing, of course, chlorophyll with its complement of iron.

It was unfortunate that this oyster was ever called the green-beard. Such a name as the "crow-silk" oyster would perhaps have forestalled prejudice altogether. Such a prejudice does not only an injustice to an important and deserving industry but leaves neglected a source of wholesome food-supply at a time when every available food-stuff should be employed.

The war has very seriously handicapped our fisherfolk chiefly by restricting their operations within narrow limits round our coasts, so that most of the usual harvest of the sea is lost. Many of them are turning their attention perforce, therefore, to in-shore fishing. Our trade with the Continent has necessarily declined in such matters as oysters, and oysters were exported in large quantity before the war. In the narrow channels or "fleets" running up between the extensive areas of practically uninhabited walled marshes which lie between the south-west portion of Mersea Island and the estuary of the Blackwater, there exists an extensive system of oyster cultivation, conducted on the small holding system by working dredgermen. Each man cultivates one or more layings, usually about 100 yards long, and the width of the "fleet" varies from, say, 30 to 100 yards. The men have now formed a co-operative society with the view of establishing a home retail trade so that the public can obtain oysters and other fish direct from the fishermen. This enterprise claims support.—*The Lancet.*

DISEASES OF ANIMALS ACTS 1894 TO 1914, SUMMARY OF RETURNS.

Period.		Anthrax		Foot-and-Mouth Disease.		Glanders.†		Parasitic Mange. ‡		Sheep Scab.	Swine Fever.	
		Outbreaks (a)	Animals.	Outbreaks (a)	Animals.	Outbreaks (b)	Animals.	Outbreaks (b)	Animals.	(b)	Outbreaks (a)	Slaughtered. *
GT. BRITAIN. Week ended November 27		14	14	9	20			26	50	11	64	302
Corresponding week in	1914 ...	14	14			1	4	‡	‡	8	88	484
	1913 ...	18	19			3	6	30	39	16	62	462
	1912 ...	20	31			1	1	41	94	17	56	638
Total for 48 weeks, 1915		528	595	49	341	47	82	‖770	‖1656	188	3714	15888
Corresponding period in	1914 ...	664	725	24	124	91	275	‡1530	‡2642	188	4056	37768
	1913 ...	528	581	1	23	139	335	2210	4342	179	2334	29521
	1912 ...	701	794	82	639	165	304	2635	5554	255	2728	37312

‡ The Parasitic Mange Order of 1911 was suspended from 6th August, 1914, to 27th March, 1915, inclusive.

(a) Confirmed. (b) Reported by Local Authorities. † Counties affected, animals attacked: —

Board of Agriculture and Fisheries, Nov. 30, 1915 ‖ Figures for thirty-five weeks only.

IRELAND. Week ended Nov. 27		...	...	...	...	...	...	Outbreaks 3	7	9	18
Corresponding Week in	1914 ...	...	...	...	...	...	...	1	4	3	2
	1913 ...	...	...	...	...	...	...	...	13	1	...
	1912 ...	...	...	...	...	...	...	1	13	2	17
Total for 48 weeks, 1915 ...		2	2	...	...	1	3	68	378	236	1310
Corresponding period in	1914 ...	1	1	76	957	...	...	74	454	185	919
	1913 ...	...	...	...	...	1	1	112	474	130	855
	1912 ...	3	3	68	382	...	...	60	337	204	1652

Department of Agriculture and Technical Instruction for Ireland, (Veterinary Branch), Dublin, Nov. 29, 1915

NOTE.—The figures for the Current Year are approximate only. * As diseased or Exposed to Infection.